Center Independent Research & Development: GSFC IRAD

Nanosensor Fabrication with 3D Manufacturing Techniques

Completed Technology Project (2014 - 2018)

Project Introduction

We use 3D manufacturing techniques to fabricate sensors based on nanomaterials.

We use 3D manufacturing techniques to fabricate sensors based on nanomaterials. This simplifies the sensor fabrication methods and increases sensitivity by eliminating interfaces present in traditional sensor chips.

Anticipated Benefits

Trace gas detection for Planetary Science, Earth Science and Heliophysics. Also, hazardous gas detection for human exploration missions.

Army for detection of hazardous gases

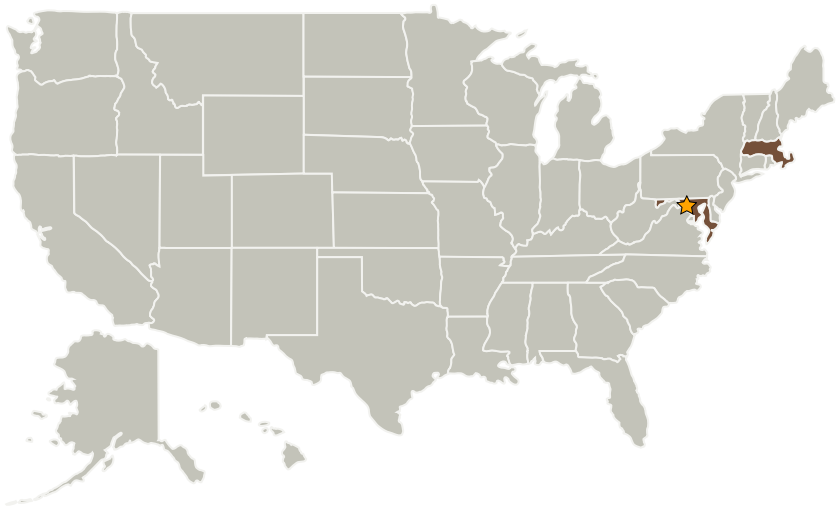
Homeland security

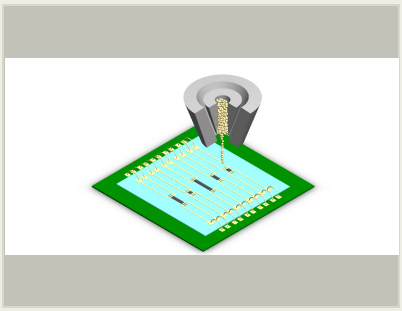
Airport security

Pollumant monitoring (EPA)

Hazardous gas monitoring in chemical plants

Primary U.S. Work Locations and Key Partners





3-D printing of nanosensors

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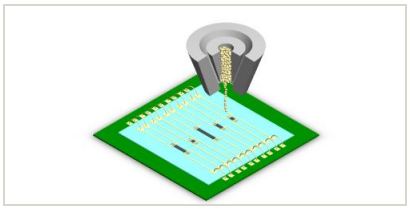
Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Co-Funding Partners	Type	Location
Northeastern University(NEU)	Academia	Boston, Massachusetts

Primary U.S. Work Locations	
Maryland	Massachusetts

Images



3-D printing of nanosensors
3-D printing of nanosensors
(https://techport.nasa.gov/image/4210)

Links

GRC-17188-1
(https://ntts.arc.nasa.gov/app/)

Project Website:

http://aetd.gsfc.nasa.gov

Organizational Responsibility

Responsible Mission Directorate:
Mission Support Directorate (MSD)

Lead Center / Facility:
Goddard Space Flight Center (GSFC)

Responsible Program:
Center Independent Research & Development: GSFC IRAD

Project Management

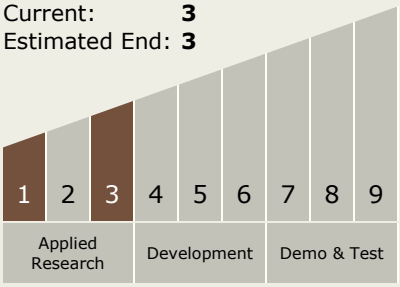
Program Manager:
Peter M Hughes

Project Managers:
Terry Doiron
Michael A Johnson

Principal Investigator:
Mahmooda Sultana

Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.4 Environment Sensors

Other/Cross-cutting:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.2 Structures
    - TX12.2.5 Innovative, Multifunctional Concepts

Target Destinations

Mars, Others Inside the Solar System